

## **SAFETY COMMISSION AGENDA STATEMENT**

**Item** 2  
**Meeting Date** 02/04/15

**ITEM TITLE:** Resolution of the Safety Commission of the City of Chula Vista Approving the Installation of an All-Way Stop at the Intersection of Corte Maria Avenue and Murray Street

**SUBMITTED BY:** Principal Civil Engineer *FXR*

City staff, during field visit, observed a high number of younger pedestrians crossing at the intersection of Corte Maria Avenue and Murray Street. This intersection has no all-way stop control and is adjacent to Hilltop Elementary School.

### **RECOMMENDATION:**

Safety Commission adopt a resolution approving the installation of an all-way stop control at the intersection of Corte Maria Avenue and Murray Street.

### **DISCUSSION:**

City staff, during field visit, observed a high number of younger pedestrians crossing at the intersection of Corte Maria Avenue and Murray Street. This intersection has no all-way stop control and is adjacent to Hilltop Elementary School. For that reason, Staff conducted an all-way stop warrant study per Council Policy #478-03, to determine if this intersection warranted for all-way stop installation. The results of the warrant study are presented below.

When evaluating an intersection for all-way stop control, various factors are studied to determine the need for an installation. The physical factors (topography) of an area, vehicle volumes and speeds, roadway alignment (vertical and horizontal curves), accident history, pedestrian volumes and available sight distance are all taken into consideration.

As the intersection exists today, only westbound and eastbound traffic on Murray Street is controlled through the use of a stop sign. Corte Maria Avenue is a northbound and southbound 36-foot wide residential street, with two lanes of travel (one per direction and parking on both sides). Corte Maria Avenue is not stopped controlled at this intersection and has an Average Daily Traffic (ADT) of 1065 vehicles with a 25 mph prima facie speed limit.

Murray Street is a 40-foot wide residential street (one lane per direction) and has an Average Daily Traffic (ADT) of 362 and a 25 mph prima facie speed limit.

A review of the accident history for a three (3) years period (1/1/2009-12/31/2011), this intersection shows no reported accident that occurred within a single 12-month period prior to the investigation date.

**All-Way Stop Warrant Study:**

**Physical Conditions:**

The following table shows the existing conditions for the streets at this intersection:

Street	Corte Maria Avenue	Murray Street
Width	36'	40'
ADT (Year) Approaching only	Southbound = 476 (2014) Northbound = 589 (2014)	Eastbound 362 (2014)
Exist. Speed limit	Prima Facie 25 mph	Prima Facie 25 mph
Controlled approach	Uncontrolled	Controlled
<u>Number of Lanes</u>	One lane in each direction	One lane in each direction
<u>Striping</u>	Crosswalk	Limit line, Stop Legend, Crosswalk, and School Legends for a midblock crosswalk
On-Street Parking	Parking Allowed on both sides	Parking Allowed on both sides
Classification	Residential	Residential
Vertical Alignment	N of int., 1.1% grade S of int., 0.3 % grade	E of int., 0.5% grade W of int., 2.0% grade
Horizontal Alignment	Tangent	Tangent

An all-way stop warrant evaluation was conducted and the subject intersection was awarded a total of 47 points based on the following conditions:

**Criteria 1 - Accident History:** (0 points assigned out of a maximum of 25 points)

- 0 points were assigned for accidents.

**Criteria 2 - Unusual Conditions:** (21 points assigned out of a maximum 21 points)

- 7 points were assigned for being adjacent to a school, within 100 ft.
- 7 points were assigned because the intersection is on "Suggested Route to School and within 300 ft of the school.
- 7 points were assigned because the intersection is adjacent to school bus drop-off.

**Criteria 3 -Pedestrian Volume:** (20 points assigned out of a maximum 20 points)

- A maximum of 20 points were assigned because 135 pedestrians were observed crossing Corte Maria Avenue between 8:00 am to 9:00 am on 10/23/2014.

**Criteria 4 - Traffic Volume:** (0 points assigned out of a maximum of 24 points)

- 9 points were assigned for traffic volume.

**Criteria 5 - Traffic Volume Difference:** (6 points assigned out of a maximum 10 points)

- 6 points were assigned, because of the intersection volume ratio of 61.5%.

**Intersection Sight Distance:**

When investigating sight distance measurements, field measurements are compared to the required stopping sight distance values. The measured sight distance at the intersection of 343' is adequate for the prima facie speed of 25 mph. (150' of stopping sight distance is required).

**CONCLUSION:**

This intersection received a total of 47 points out of a possible 100 points, where a minimum of 45 points are required to justify the installation of an all-way stop control. Therefore, this intersection warrants the installation of an all-stop control.

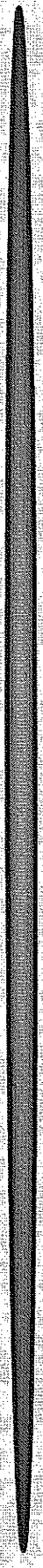
**FISCAL IMPACT:**

The estimated cost for the installation of two stop signs, stop bars, and pavement legends at this intersection is \$1200.00. This cost will be funded by an existing Traffic Engineering Capital Improvement Project, TF-332, Signing and Striping Program.

Attachments:      Location Map  
                         All-Way Stop Study



# Location Map



**Proposed All-  
Way Stop Control**



# ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b>Corte Maria Avenue &amp; Murray Street</b>		PAGE
DATE	<b>10/28/2014</b>		1 OF 6
POLICY NUMBER	478-03	EFFECTIVE DATE	03/06/2001

## GENERAL

Points are assigned to each of these warrants. The total points possible are 100. The installation of an all-way stop control is justified with a minimum of 45 points, unless:

Case 1:

If Caltrans' criteria is met, the point system is not applicable.

Case 2:

If any of the five criteria is met to the extent of 100% an all-way stop control intersection may be warranted even though the minimum number of points is not accumulated. **Criteria 2 and 3 below - met 100%**

Case 3:

If the following conditions are met:

(a) The street to be controlled is within a residence district as defined in Section 515 of the California Vehicle Code, and

(b) The street to be controlled is classified a collector or is functioning as a collector, and

(c) The subject intersection is not within 600 feet from the nearest controlled intersection along the collector, and

(d) There is a parallel arterial highway that can be used as an alternative route, then

The subject intersection shall receive a bonus of 10 points.

POINTS: 0

## ALL-WAY STOP POINT SYSTEM CRITERIA:

### 1) ACCIDENT WARRANT: ( 25 points )

Five Points are assigned for each accident susceptible to correction by an all-way stop control during any 12-month period prior to the investigation date.

Total number of accidents correctible by all-way stop: 0

( Maximum 25 points )

POINTS: 0

### 2) UNUSUAL CONDITION WARRANT: ( 21 points )

- 1) Adjacent to school, fire station, playground, senior center and/or amusement park.  
(7 points maximum )

- |   |          |
|---|----------|
| a) within 100' of the intersection.         | 7 points |
| b) between 101'-250' from the intersection. | 5 points |
| c) between 251'-400' from the intersection. | 3 points |
| d) within 500' of the intersection.         | 1 point  |

# ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b>Corte Maria Avenue &amp; Murray Street</b>		PAGE
DATE	<b>10/28/2014</b>		<b>2 OF 6</b>
POLICY NUMBER	<b>478-03</b>	EFFECTIVE DATE	<b>03/06/2001</b>

- 2) Any visibility obstruction including horizontal and/or vertical curves which result in limited stopping sight distance based on either the posted speed limit or the 85% tile speed, whichever is higher.  
(7 points maximum)

$$\frac{343}{150} \times 100 = 229\% \geq 100\% \quad 0 \text{ pts}$$

- a) provides for less than 40% of the required sight distance. 7 points
- b) provides for less than 50% of the required sight distance. 6 points
- c) provides for less than 60% of the required sight distance. 5 points
- d) provides for less than 70% of the required sight distance. 4 points
- e) provides for less than 80% of the required sight distance. 3 points
- f) provides for less than 90% of the required sight distance. 2 points
- g) provides for less than 100 % of the required sight distance. 1 point

- 3) An intersection leading to an arterial from an interior (circular) collector. 0 pts 2 points

- 4) Intersection with steep grades within 500' from the intersection on the downhill approach.

- a) greater than 9% grade 7 points
- b) greater than 8% grade 0 pts 5 points
- c) greater than 7% grade 3 points
- d) greater than 6% grade 1 point

- 5) Intersection is on "Suggested Route To School" and no other controlled crossing is located within 600'.  
(7 points maximum)

- a) intersection is 300' from school grounds. 7 pts 7 points
- b) intersection is 400' from school grounds. 5 points
- c) intersection is 500' from school grounds. 3 points
- d) intersection is 600' from school grounds. 1 point

- 6) High approach speeds.

- a) prevailing speeds are up to 5 mph higher than posted speed. 0 pts 1 point
- b) prevailing speeds are up to 10 mph higher than posted speed. 4 points
- c) prevailing speeds are more than 10 mph higher than posted speed. 7 points

- 7) Adjacent to bus stop

Public mailbox 2 points

School bus drop-off 7 pts 7 points

( Maximum 21 points )

POINTS: 21

# ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b>Corte Maria Avenue &amp; Murray Street</b>			PAGE
DATE	<b>10/28/2014</b>			3 OF 6
POLICY NUMBER	478-03	EFFECTIVE DATE	03/06/2001	

## 3) PEDESTRIAN VOLUME ( 20 points )

Consideration is given to large numbers of pedestrians crossing the major street during the busiest hour of an average day.

Peak Hour: 8:00-9:00 AM

Number of Pedestrians: 135

Pedestrians crossing major street, Total during the peak pedestrian hour

Volumes:	1-10	11-20	21-30	31-40	41-OVER
Points:	4	8	12	16	20

( Maximum 20 points )

POINTS: 20

## 4) TRAFFIC VOLUME ( 24 points ) \*

Points are dependent upon the magnitude of vehicular volumes entering the intersection during the eight busiest hours of an average day.

Traffic Counts (circle eight highest hour volumes):

DIRECTION	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	TOTAL
NB	57	218	17	8	15	22	20	55	71	32	35	13	4	7	7	581
SB	43	140	8	12	14	6	9	43	56	23	26	12	5	10	6	413
SUBTOTAL	100	358	25	20	29	28	29	98	127	55	61	25	9	17	13	994
EB	42	59	6	4	8	9	9	29	67	46	39	6	13	7	6	350
WB																
SUBTOTAL	42	59	6	4	8	9	9	29	67	46	39	6	13	7	6	350
TOTAL	142	417	31	24	37	37	38	127	194	101	100	31	22	24	19	
POINTS																

-3 POINTS ARE ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES EXCEED 500 AND MINOR STREET VOLUMES (INCLUDING PEDESTRIANS) EXCEED 200.

-2 POINTS ARE ASSIGNED PER HOUR WHEN TOTAL ENTERING VOLUMES EXCEED 500 BUT MINOR STREET VOLUMES ARE LESS THAN 200, BUT MORE THAN 100.

-1 POINT IS ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES EXCEED 500 BUT MINOR STREET VOLUMES ARE LESS THAN 100.

-1 POINT IS ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES DO NOT MEET 500, BUT MINOR STREET VOLUMES EXCEED 200.

In residence districts as defined by Section 515 CVC, if the 85th percentile approach speed of the major street exceeds 35 miles per hour, the minimum vehicular volume warrants is 70% of the above requirements.

( Maximum 24 points )

POINTS: 0

# ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b>Corte Maria Avenue &amp; Murray Street</b>		PAGE
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## 5) TRAFFIC VOLUME DIFFERENCE ( 10 POINTS )

All-way stops operate best when the major and minor street approach traffic volumes are nearly equal. Points shall be assigned in accordance with the following table:

$$\frac{\text{*24-Hour Minor St. Approach Volumes}}{\text{*24-Hour Major St. Approach Volumes}} \times 100 = \frac{362}{589} \times 100 = 61.5\%$$

PERCENTAGE	POINTS
95-100	10
85-94	9
75-84	8
65-74	7
55-64	6
45-54	5
35-44	4
25-34	3
15-24	2
5-14	1
0-4	0

( Maximum 10 points )

POINTS: **6**

*\*For T-intersections, the percent is the ratio of the minor street approach volume to the highest single leg approach volume on the major street multiplied by one hundred.*

## CALTRANS CRITERIA (Chapter 4 CalTrans Traffic Manual)

Any of the following conditions may warrant a multi-way STOP sign installation, regardless of the point system:

- 1) Where traffic signals are warranted and urgently needed, the multi-way stop may be an interim measure that can be installed quickly to control traffic while arrangements are being made for the signal installation.
- 2) An accident problem, as indicated by five or more reported accidents within a 12 month period of a type susceptible to correction by a multi-way stop installation. Such accidents include right- and left-turn collisions as well as right-angle collisions.
- 3) Minimum traffic volumes - The total vehicular volume entering the intersection from all approaches must average at least 500 vehicles per hour for any 8 hours of an average day, and the combined vehicular and pedestrian volume from the minor street or highway must average at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour, but when the 85th percentile approach speed of the major street traffic exceeds 40 miles per hour ( \*\* ), the minimum vehicular volume warrant is 70 percent of the above requirements.

( \*\* ) This speed applies only to CalTrans Criteria



## ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b>Corte Maria Avenue &amp; Murray Street</b>		PAGE
DATE	<b>10/28/2014</b>		5 OF 6
POLICY NUMBER	478-03	EFFECTIVE DATE	03/06/2001

ALL-WAY STOP SUMMARY

INTERSECTION: Corte Maria Avenue Murray Street  
(Major) (Minor)

DATE INVESTIGATION WAS COMPLETED: October 28, 2014

TOTAL SCORE: 47 points out of a possible 100.  
The minimum required to justify an all-way stop control is 45 points.

INTERSECTION DIAGRAM:

## ALL-WAY STOP WARRANT SUMMARY

LOCATION	<b><i>Corte Maria Avenue &amp; Murray Street</i></b>		PAGE
DATE	<b>10/23/2014</b>		<b>6 OF 6</b>
POLICY NUMBER	<b>478-03</b>	EFFECTIVE DATE	<b>03/06/2001</b>

**RECOMMENDATIONS:**

This intersection received a total of 47 points out of a possible 100 points, where a minimum of 45 points are required to justify the installation of an all-way stop control. Also, Criteria 2 and 3 received the maximum points allowed. This intersection is adjacent to Hilltop Drive Elementary School and during the peak hour monitored, 135 pedestrians crossed Corte Maria Avenue. Therefore, staff recommends the installation of the all-way stop at this intersection.

**REMARKS:**

# MetroCount Traffic Executive Event Counts

## EventCount-523 -- English (ENU)

### Datasets:

**Site:** [Corte Maria Av] SB approach to Murray St  
**Input A:** 3 - South bound. - Added to totals. (1)  
**Input B:** 0 - Unused or unknown. - Excluded from totals. (0)  
**Survey Duration:** 9:00 Wednesday, October 15, 2014 => 10:46 Friday, October 17, 2014

### Profile:

**Filter time:** 9:00 Wednesday, October 15, 2014 => 10:46 Friday, October 17, 2014  
**Name:** Default Profile  
**Scheme:** Count events divided by two.  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Events = 956 / 956 (100.00%)

### \* Wednesday, October 15, 2014=304 (Incomplete), 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	2	10	9	18	13	47	52	24	24	22	26	28	24	2	3	
-	-	-	-	-	-	-	-	-	0	1	1	6	4	6	32	9	7	3	12	2	13	0	0	0
-	-	-	-	-	-	-	-	-	0	3	3	3	2	7	7	5	4	5	5	2	5	0	0	0
-	-	-	-	-	-	-	-	-	2	4	4	2	6	16	6	5	5	7	6	9	4	0	2	0
-	-	-	-	-	-	-	-	-	0	2	1	7	1	18	7	5	8	7	3	15	2	2	1	0

PM Peak 1415 - 1515 (73), PM PHF=0.57

### \* Thursday, October 16, 2014=427, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	1	0	4	0	1	4	43	140	8	12	14	6	9	43	56	23	26	12	5	10	6	0	4	
0	1	0	0	0	0	2	0	41	0	1	0	1	3	2	29	14	6	4	1	0	1	0	1	0
0	0	0	4	0	0	0	6	75	4	0	2	1	3	4	9	5	6	6	0	0	2	0	1	3
0	0	0	0	0	0	0	8	19	3	4	5	2	1	13	7	1	7	2	3	10	0	0	2	0
0	0	0	0	0	1	2	29	5	1	7	7	2	2	24	11	3	7	0	1	0	3	0	0	0

AM Peak 0745 - 0845 (164), AM PHF=0.55 PM Peak 1430 - 1530 (75), PM PHF=0.65

### \* Friday, October 17, 2014=224 (Incomplete), 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
3	0	0	0	0	1	7	52	146	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	4	4	50	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	0	0	0	0	0	0	6	62	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	1	6	28	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	1	2	36	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

$$\text{SB ADT} = \frac{951}{2} = 476$$

## MetroCount Traffic Executive Event Counts

### EventCount-526 -- English (ENU)

#### Datasets:

**Site:** [Corte Maria Av] NB approach to Murray  
**Input A:** 1 - North bound. - Added to totals. (1)  
**Input B:** 0 - Unused or unknown. - Excluded from totals. (0)  
**Survey Duration:** 17:47 Tuesday, October 14, 2014 => 10:50 Friday, October 17, 2014

#### Profile:

**Filter time:** 0:00 Thursday, October 16, 2014 => 0:00 Friday, October 17, 2014  
**Name:** Default Profile  
**Scheme:** Count events divided by two.  
**Units:** Non metric (ft, mi, ft/s, mph, lb, ton)  
**In profile:** Events = 589 / 1206 (48.84%)

#### \* Thursday, October 16, 2014=589, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	0	1	3	57	218	17	8	15	22	20	55	71	32	35	13	4	7	7	2	2	-
0	0	0	0	0	0	2	4	65	8	1	4	7	4	5	36	14	5	3	2	2	2	0	0	-
0	0	0	0	0	1	1	8	113	4	3	2	1	6	4	17	6	8	2	0	4	0	1	0	-
0	0	0	0	0	0	0	14	35	1	3	5	6	4	23	6	8	10	5	0	0	2	1	2	-
0	0	0	0	0	0	0	31	5	4	1	4	8	6	23	12	4	12	3	2	1	3	0	0	-

AM Peak 0745 - 0845 (244), AM PHF=0.54

[illegible]

**City of Chula Vista**  
**Traffic Engineering Department**  
**Traffic Collision History Report**

10/21/2014  
Page 1

Location: Corte Maria Av / Murray St  
Date Range Reported: 01/01/2005 - 12/31/2012  
Total Number of Collisions: 1

Report No.	Date	Time	Dist.	Dlr.	Type of Collision	Motor Veh. Involved With	Direct. of Travel 1	Movement Prec. Coll. 1	Direct. of Travel 2	Movement Prec. Coll. 2	PCF	Inj.	Kil
4862426	8/7/10	09:25	14	North	Not Stated	Other Motor Vehicle	South	Proceeding Straight	South	Parked	Improper Turning	0	0

Total Number of Collisions: 1

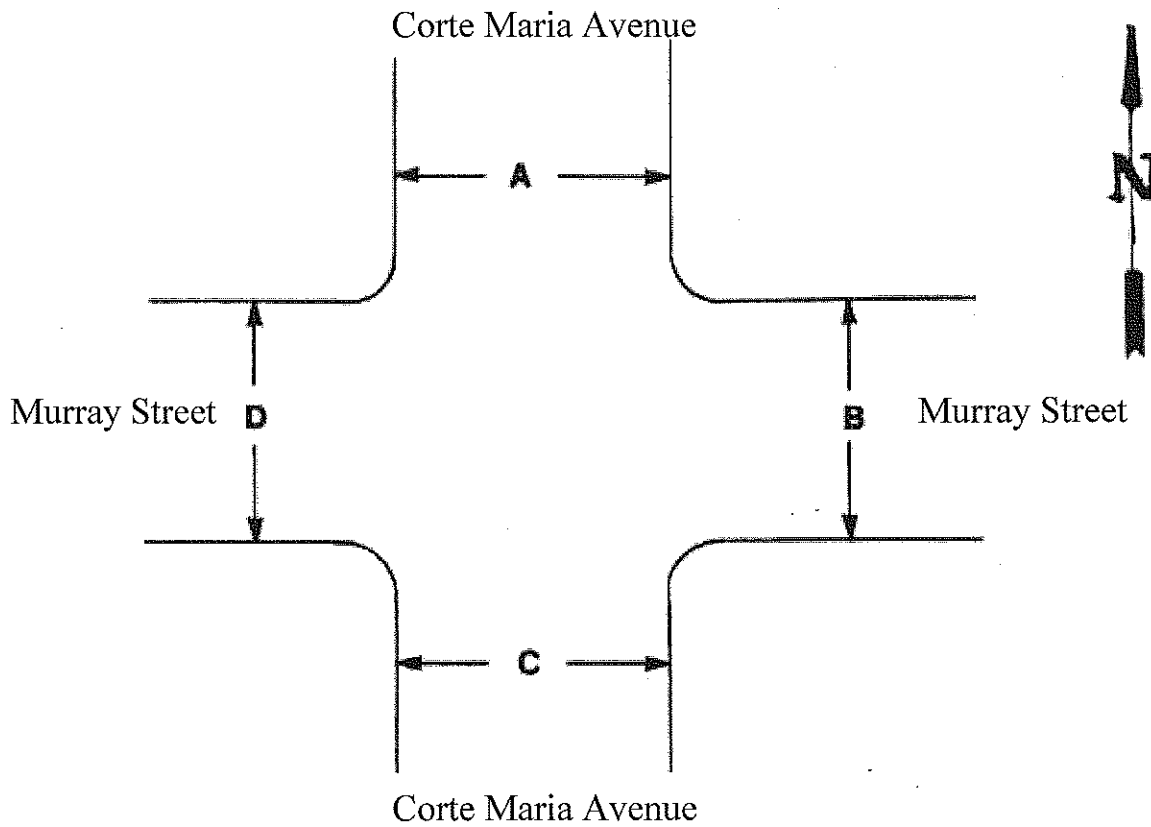
**Settings Used For Query**

**Parameter**

Street Name  
Cross Street  
Starting Date  
Ending Date  
Intersection

**Setting**

CORTE MARIA AV  
MURRAY ST  
01/01/2005  
12/31/2012  
Intersection Related



## PEDESTRIAN COUNTS

DATE: 10-23-14			LOCATION: Cortez Maria Avenue – Murray Street					
TIME (AM)	A School Age	A Adult Age	B School Age	B Adult Age	C School Age	C Adult Age	D School Age	D Adult Age
8:00 - 8:15	1		5	4	20	8	11	5
8:15 - 8:30	2	1	9	11	35	37	16	14
8:30 – 8:45		2		4		29		11
8:45 – 9:00								
TOTAL	3	3	14	19	55	74	27	30
REMARKS:								
TIME								
TOTAL								